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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
TUNG, KEE M

ART UNIT	PAPER NUMBER
2676	

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 August 2004</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 6-10, 12-15, 17-19, 21-24, 27-30, 33-36 and 38* is/are rejected.

7)☒ Claim(s) *4, 5, 11, 16, 20, 25, 26, 31, 32 and 37* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

The response filed 8/20/04 has been considered in preparing this Office action.

1.   Applicant's request for reconsideration of the finality of the rejection of the last

Office action is persuasive as indicated in Examiner's Interview Summary Record and,

therefore, the finality of that action is withdrawn. This response is considered as a

response to a Non-Final Office action.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1, 2, 6, 9, 10, 13, 18, 22, 23, 28, 29, 34, 35 and 38 are rejected under 35

U.S.C. 103(a) as being unpatentable over Dye, et al (5,969,728 hereinafter "Dye") in

view of Laksono et al (6,339,427 hereinafter "Laksono") and Christie et al (6,157,996

hereinafter "Christie").

Regarding claim 1, representative of claims 9, 11, 13, 18, 23, 29, 34-35, 38, Dye

discloses a method of synchronizing graphics commands (Column 1, line 65 through

Column 2, line 61) in a multi-stage graphics system (Column 9, line 33), comprising:

adding [texture, Claims 2, 11] (Column 5, lines 37-53 and col. 6, lines 27-36) draw

commands (Column 7, lines 7-9) to entries in a [display instructions] list, the draw

commands for drawing graphics on a frame (Column 3, lines 10-37); transferring the

draw commands in the entry to a next stage in the graphics system (see above, Column

2, lines 15-22).

Dye does not disclose drawing commands list. Laksono teaches drawing

commands list (abstract, display command list). The motivation for combining

synchronizing graphics commands with drawing command lists is to provide a reduction

in host processor overhead while allowing a graphics processor to more efficiently

obtain the command data to efficiently process graphics information (Column 2, line 50-

55). Laksono is evidence that at the time of the invention it would have been obvious

to one skilled in the art of graphics processing to combine the benefits of graphics

commands synchronization using display lists, as Dye discloses, with drawing

command lists, as Laksono teaches, to improve graphics processing efficiency.

The combination of Dye and Laksono does not disclose associating one or more

predicate functions satisfiable upon the occurrence of a condition; and responsive to the

satisfaction of the predicate functions associated with each entry.   Christie teaches

associating one or more predicate functions satisfiable upon the occurrence of a

condition; and responsive to the satisfaction of the predicate functions associated with

each entry (Column 6, line 51; Column 10, lines 44-61). The motivation for combining

synchronizing graphics commands with predicate functions meeting conditions is to

avoid performance penalty in a multi-stage pipelined processor (Column 2, line 23 –

56). Christie is evidence that at the time of the invention it would have been obvious to

one skilled in the art of graphics processing to combine the benefits of graphics

commands synchronization using display lists, as Dye and Laksono discloses, with

predicate functions that satisfy conditions, as Christie teaches, to improve graphics processing efficiency. Therefore, at least claims 1, 9, 13, 18, 23, 28, 29, 34, 35 and 38 would have been obvious in view of the combination of Dye, Laksono and Christie.

[Further claims 18, 23, 29] graphics data including draw commands associated with one or more textures (Column 5, lines 51-53); and

[Further claim 35] receiving graphics data and program code from a developer (*DirectDraw,* Column 5, lines 32-33).

4. Regarding claims 2 and 22, Dye discloses a method of claim 1, further comprising: loading textures in to a texture memory of the graphics system (Column 5, lines 51-53; Column 6, lines 27-64).

5. Regarding claim 6, representative of claim 10, Laksono teaches drawing commands list (Fig. 1 and abstract) stored in a queue transferred in a first in first out order (Fig. 1, circular FIFO and command FIFO). The motivation for combining synchronizing graphics commands with drawing command lists stored in a queue transferred in a first in first order is to better match the graphics driver filling commands with the graphics processor drawing command rates (Fig. 1). Laksono is evidence that at the time of the invention it would have been obvious to one skilled in the art of graphics processing to combine the benefits of graphics commands synchronization using display lists, as Dye discloses, with drawing command lists stored in a queue transferred in a first in first out order, as Laksono teaches, to better match graphics driver filling command and graphics processor command rates. Therefore, at least

claims 6 and 10 would have been obvious in view of the combination of Dye, Laksono
and Christie.

6.   Claims 3, 7, 8, 14, 15, 17, 19, 21, 24, 27, 30, 33, 36 are rejected under 35 U.S.C.
103(a) as being unpatentable over Dye et al (5,969,728 hereinafter "Dye") in view of
Laksono et al (6,404,428 hereinafter "Laksono") and Christie et al (6,157,996
hereinafter "Christie"), as applied to claims 1, 2, 18, 23, 29 and 35 above, and further in
view of Baldwin et al (6,587,113 hereinafter "Baldwin").

        Regarding claim 3, representative of claims 21, 24, 30 and 36, the combination of
Dye, Laksono and Christie does not disclose comprising: determining whether a texture
can be placed in the texture memory according to a linear, first-fit placement algorithm;
if the determination is positive, loading the texture into the texture memory according to
the linear, first-fit placement algorithm. Baldwin teaches according to a linear, first-fit
placement algorithm; if the determination is positive, loading the texture into the texture
memory according to the linear, first-fit placement algorithm (Column 13, lines 18- 49;
Column 22, lines 25-57). The motivation for combining synchronizing texture memory
and graphics commands with loading texture memory in linear fashion is to enable
reuse of data and multiple pre-loads at high data rates for modern computer rendering
architectures (Column 21, line 20 – 38; Column 22, lines 61-64; Column 4, lines 45-50).
Baldwin is evidence that at the time of the invention it would have been obvious to one
skilled in the art of graphics processing to combine the benefits of graphics commands
synchronization using display lists, as Dye discloses, with linear texture memory, as

Baldwin teaches, to enable high speed graphics memory processing. Therefore, at least claims 3, 21, 24, 30 and 36 would have been obvious in view of the combination of Baldwin, Dye, Laksono and Christie.

Regarding claim 7, representative of claim 8, Dye discloses the method of claim 2, wherein loading comprises: textures in a texture memory. The combination of Dye, Laksono and Christie does not disclose scaling a texture to align the texture with a [32-bit] address boundary in the texture memory. Baldwin teaches scaling a texture to align the texture with an [32-bit] address boundary in the texture memory (Column 13, lines 18-49; Column 14, lines 39-61; Column 22, lines 60-61). The motivation for combining synchronizing texture memory and graphics commands with scaling a texture to align on a 32-bit boundary is to fit the texture data into one page efficiently for most 2D use of texture maps for font, icon and stipple pattern storage (Column 13, lines 24-29). Baldwin is evidence that at the time of the invention it would have been obvious to one skilled in the art of graphics processing to combine the benefits of graphics commands synchronization using display lists, as Dye discloses, with scaling texture data to align on a 32-bit address boundary, as Baldwin teaches, to fit texture data efficiently on one page of memory and match with most 2D data needs. Therefore, at least claims 7 and 8 would have been obvious in view of the combination of Baldwin, Dye, Laksono and Christie.

Regarding claim 14, representative of claim 17, Dye discloses a method of claim 1, wherein the graphics system is responsive to an occurrence of a predetermined event in the graphics system to the next stage in the computer graphics system (see

above, Figure 4, Column 9, line 39 through Column 10, line 50). The combination of Dye, Laksono and Christie does not disclose an interrupt service routine (ISR). Baldwin teaches an interrupt service routine (ISR) (Column 54, line 14). The motivation for combining synchronizing texture memory and graphics commands with interrupt service routine (ISR) is request a page of texture data to be read from host memory when it is not resident in the working set of texture data in advance of when it is needed (Column 11, line 64 through Column 12, line 31). Baldwin is evidence that at the time of the invention it would have been obvious to one skilled in the art of graphics processing to combine the benefits of graphics commands synchronization using display lists, as Dye discloses, with an interrupt service routine to request texture data in page length from the host in advance of when it is needed. Therefore, at least claims 14 and 17 would have been obvious in view of the combination of Baldwin, Dye, Laksono and Christie.

Regarding claim 15, representative of claims 19, 27, 33, Dye discloses the method of claim 14, wherein the predetermined event is a swap event (see above, Column 2; Column 9, lines 4-6).

7.   Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dye et al (5,969,728 hereinafter "Dye") in view of Laksono et al (6,339,427 hereinafter "Laksono") and Christie et al (6,157,996 hereinafter "Christie") as applied to claim 1 above, and further in view of Case et al (5,315,696 hereinafter "Case").

Regarding claim 12, the combination of Dye, Laksono and Christie does not disclose a screen buffer, it being a back buffer. Case teaches a screen buffer being a

back buffer, and holding the drawing function (Column 19, line 63 through Column 20, line 10). The motivation for combining synchronizing graphics commands with a back buffer and holding the drawing function is to preserve the internal state until modified without re-specifying pertinent graphics commands for a trivial draw operation and without reloading data (Column 19, line 28 through Column 20, line 5). Case is evidence that at the time of the invention it would have been obvious to one skilled in the art of graphics processing to combine the benefits of graphics commands synchronization using display lists, as Dye discloses, with a background buffer and holding the drawing function, as Case teaches, to improve graphics processing efficiency. Therefore, at least claim 12 would have been obvious in view of the combination of Case, Dye, Laksono and Christie.

Response to Arguments

8.   Applicant's arguments filed 8/20/04 have been fully considered but they are not persuasive.

Basically, applicant argues that Christie fails to teach or suggest the claimed "predicate function" which is satisfying upon the occurrence of a "condition". However, what is the particular "condition" is not recited at least in the independent claims. Therefore, even if the "condition" is for "true or false" of Christie reads the claimed "condition". As indicated below, the particular "condition" recited in dependent claims have been indicated as allowable over Christie.

With regarding to argument of "when" rather than "whether", it is noted that the claimed merely recited "responsive to the satisfaction of the predicate functions upon

the occurrence of a condition" which clearly reads by the teachings of condition of Christie. The claim doesn't required "when" as argued by applicant.

Regarding the argument of no motivation, it is note that the examiner gave the reasons as shown in the detailed rejection above. Applicant further argues that "Christie is actually talking about conditional execution of instructions, not predicate functions." As response under "Response to Arguments", applicant's claims did not recited any particular functions or conditions to distinguish from Christie. Therefore, applicant's arguments are not deemed to be persuasive.

Allowable Subject Matter

9.   Claims 4, 5, 11, 16, 20, 25, 26, 31, 32 and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of
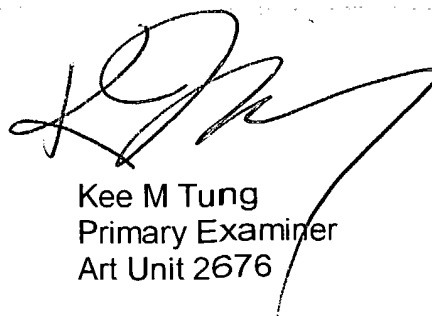
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kee M Tung whose telephone number is 703-305-9660. The examiner can normally be reached on Tuesday - Friday from 5:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 703-308-6829. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kee M Tung
Primary Examiner
Art Unit 2676